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New or otherwise interesting Plants of Eastern Tennessee.

BY T. H. KEARNEY, JR.

The following notes relate, for the most part, to a collection made by the writer during August and September, 1897, in Cocke county, Tennessee. Most of the material was collected about Wolf Creek Station, and between that point and Lemon's Gap, as well as along the French Broad between Paint Rock and Del Rio. The highest elevations visited were The Bluff and Max Patch Mountains, both about 1400 m. high. Along the French Broad near Wolf Creek the height above sea-level is probably not much over 600 M.

TRADESCANTIA MONTANA Shuttlw.; Britton & Brown, Ill. Fl. 1 : 377. 1896.

Common about Wolf Creek, and the only species observed there. Two well-marked forms were noted, both growing on rather fertile soil in open, hillside woods. In one the stems are several from one root, slender, rather flexuous (but not strongly zigzag as is usually the case in *T. pilosa*), about 3 dm. high, and the largest leaves are 15 cm. long and about 1 cm. wide. In the other form the stems are usually solitary, stout, not flexuous, attaining a maximum height of 9 dm., and the largest leaves measure 25 cm. long and 2 cm. wide.

DISPORUM sp.

Fruiting specimens of a *Disporum* were collected near Wolf Creek Station (no. 917) but whether of *D. maculatum* (Buckl.) Britton or of *D. lanuginosum* (Michx.) Nichols., I am unable to decide. Distinct as the two species are when in flower, I can nowhere find any characters given for differentiating them when in fruit. Careful study of the two species in the field, localities for each having first been accurately marked while the plants are in flower, may bring to light characters that will serve to distinguish them later in the season.

CELTIS PUMILA Pursh, Fl. Am. Sept. 200. 1814.

Grows on dry sandstone cliffs along the French Broad River

near Wolf Creek (no. 886), accompanied by *Philadelphus hirsutus* Nutt. and *Pentstemon Smallii* Heller. The fruit, at that time (Aug. 25) apparently quite mature, was of a tawny yellow, and did not darken at all in drying. The largest stem noted was about 1 cm. in diameter just above the ground. The maximum height was about 1 m. The leaves do not agree in one particular with Pursh's description: they are extremely scabrous above, while Pursh says "foliis utrinque glabriusculis."

BUCKLEYA DISTICHOPHYLLA (Nutt.) Torr. Am. Journ. Sci. 45: 170. 1843.

A number of plants were encountered during the past season growing in rather dry soil on a wooded bluff on the French Broad River between Wolf Creek and Paint Rock, fully 30 m. above the river. I have not before seen *Buckleya* growing so high above the surface of the water. The plants were less vigorous than those nearer the bank. The bushes everywhere fruited abundantly last season, while in 1896, I was told, scarcely any fruit could be found.

SILENE OVATA Pursh, Fl. Am. Sept. 316. 1814.

Quite abundant in places near Lemon's Gap, Cocke County (alt. about 1200 m.) growing in fertile soil in a thicket of *Rubus villosus* Ait. at the roadside, elsewhere in open woods (no. 617). In full flower Sept. 3-8. The plant has a strong and rather disagreeable odor. The largest specimen seen was 16.5 dm. high and the maximum diameter of the stem was very nearly 1 cm. The root-system is strongly developed, many of the fibers being much thickened and thus giving the plant an unusually firm hold on the soil.

CIMICIFUGA RUBIFOLIA n. sp.

Cimicifuga cordifolia Torr. & Gray Fl. N. Am. 1: 36. 1838-40, in part?—Not Pursh.*

A tall long-lived perennial, with hard knotted rootstocks and solitary wand-like stems bearing one, or more often two, large biternate leaves near the base. Rootstock thick, horizontal, attaining a maximum length of 8 cm., bearing numerous strong root-fibers; stems 6-14 (mostly 10-12) dm. high, erect, rather stout

* Fl. Am. Sept. 373. 1814.

at base, but diminishing rapidly towards summit, usually dark brown-purple, rather acutely 4-angled below, almost terete towards summit, more or less sulcate on the faces, especially below, smooth and glabrous or with a few lax delicate hairs up to the inflorescence, there very sparsely to rather densely puberulent or short-pubescent; petioles 2-4 dm. long, rather stout, straight or somewhat arcuate below, angled, rather deeply sulcate on the upper face towards base, rather densely pubescent in the groove, otherwise nearly glabrous or sparsely pubescent, with lax hairs especially towards summit, somewhat dilated at apex, much enlarged and with thin wing-like margins clasping the stem at base; leaves biternate, the terminal division usually consisting of a single leaflet much larger than the others, but occasionally trifoliate, the lateral divisions always trifoliate; petiole of terminal division 10-12 cm. long, angled and sulcate like the main petiole, sparsely pubescent with lax delicate hairs, the groove densely so; petioles of lateral divisions 6-9 cm. long, equal or one as much as 2 cm. longer than the other; petiolules of lateral leaflets of terminal division (when present) about 5 mm. long, deeply sulcate on the upper face, very pubescent, especially in the groove; petiolules of leaflets of lateral divisions shorter, otherwise similar; terminal leaflet of terminal division 10-20 (mostly 15-16) cm. long, 12-20 (mostly about 15) cm. wide between the apices of the two largest lobes, very broadly obovate in outline, equilateral, sharp-acuminate at apex, deeply cordate with a sinus of equal width throughout or widening towards the mouth, coarsely and irregularly dentate, deeply and acutely palmately three-lobed, the primary lobes themselves less deeply 2-3-lobed and the secondary lobes in turn slightly 2-3-lobed, thin, dark green above, paler beneath, smooth and glabrous above, sparsely short-ciliate, sparsely to rather densely pubescent along the veins beneath with rather long, appressed, delicate, lustrous hairs, very veiny, the veins prominent, especially below, strongly tending to anastomose, the two largest lateral ones nearly as strong as the midvein; other leaflets smaller and inequilateral, otherwise similar; inflorescence a simple panicle of 2-4 slender racemes, the terminal and much the longest one 15-30 (usually about 20) cm. long; rhachis and pedicels sparsely, or the pedicels occasionally rather densely pubescent with short straight hairs; pedicels (in flower) about 2 mm. long, rather slender, much thickened at summit, subtended by a lance-subulate bract about 2 mm. long, bearing at base 2 laterally disposed, ovate-triangular, acute, ciliolate bractlets about 1 mm. long, pedicels (in fruit) 4-5 mm. long; sepals 5, fugacious, 4.5-5 mm. long, 3-4 mm. wide, rounded at apex, narrowed at base, concave; the three outer obovate-oblong, with about 7 distinct longitudinal veins and obscure cross-veins; the two inner broadly obovate, more deeply concave, thinner in texture and whiter in color, with 5-7 longitudinal veins and dis-

tinct, somewhat reticulated cross-veins; petals none; stamens 35–65; filaments about 4 mm. long, flattened especially towards summit; anthers about .5 mm. long; pistil solitary, sessile, about 2 mm. long from base of ovary to summit of stigma, the style and stigma only slightly differentiated from the body of the ovary; ovary about .7 mm. in greatest transverse diameter, perfectly glabrous, strongly compressed latterly, the sides irregularly oblong in outline; style slightly recurved, very short; stigma minute; pods 8–10 (commonly 8) mm. long, very nearly sessile, strongly compressed laterally with sides irregular oblong, rounded towards apex on the dorsal face, rounded towards base on the ventral face, beaked by the short, blunt, hardened, apically somewhat enlarged, ascending style which departs from the ventral side of the pod, just below the summit, at an angle of about 45° , pale green, walls thin, becoming almost chartaceous, veins prominent, somewhat reticulated; seeds usually 6, the four middle ones in two rows, the other two solitary, about 3 mm. long, about 1.5 mm. wide, lenticular, somewhat flattened laterally, the sides oblong in outline, chestnut brown, covered with pale brown thin chaffy scales, especially along the edges where they form a well-developed deeply lacerate wing.

In rich soil on a wooded bluff along the Tennessee River, near Knoxville, Tennessee, where it was collected in flower by the writer early in September, 1890, and 1891, and in fruit by Prof. A. Ruth in October, 1897. The large terminal leaflet suggests the leaf of *Rubus odoratus* L.

A very distinct species of the Section *Actinospora*, most nearly allied to *C. Americana* Michx. though apparently slightly approaching *C. racemosa* (L.) Nutt. (Section *Macrotys*) in its solitary, sessile ovary, short style and partially two-ranked seeds. However it is most abundantly distinguished from that species by its bibracteolate and much shorter pedicels, much fewer stamens with filaments one-half as long and anthers one-half as large, thin-walled pods about twice as large and chaff-covered, lenticular seeds. From *C. Americana* our plant is differentiated by the following characters: bractlets of pedicel always basal (in *C. Americana* usually borne near middle of pedicel); pubescence of inflorescence rather sparse and straight, not glandular (in *C. Americana* dense, glandular, almost granular); petals none (in *C. Americana* the usually two, obovate, deeply lobed, cucullate petals are characteristic); shorter filaments (about 7 mm. long in *C. Americana*); smaller anthers (7 mm. long in *C. Americana*); sessile, solitary ovary; much shorter and straighter style; much shorter beak to

the pod ; and partially two-ranked seeds. From both of our well-known eastern species *C. rubifolia* differs in its biternate leaves with commonly unifoliolate terminal division, in the cut of the large, very broad, deeply cordate leaflets and in the characteristic appressed pubescence along the veins on the under leaf-surface.

Cimicifuga cordifolia Pursh is almost certainly a form of *C. Americana* Michx. Pursh's description is clearly meant for that species and he cites Michaux's name as a synonym. It is not probable that Pursh would have omitted from his Flora a plant that must have been so familiar to him as this common species of the Southern Mountains. The plant figured in Curtis' Botanical Magazine,* has much the leaf of *C. rubifolia*, but is described as having "the nauseous smell of its relatives" and "flowers in June and July." *C. rubifolia* is like *C. Americana* in its total lack of odor and its autumnal flowering. It is more likely that Curtis had a form of *C. racemosa* with broad, cordate leaflets, such as is represented in the National Herbarium by a specimen from East Tennessee; of C. C. Parry's collecting. It was doubtless some such form that Dr. Gray had in mind when he reduced *C. cordifolia* to *C. racemosa* as a variety. The description of *C. cordifolia* in Torr. and Gray may possibly include *C. rubifolia*, although this is not probable. Indeed, it is not easy to imagine upon what that description was based. Pursh's characters certainly give no warrant for the assumption that his plant had sessile ovaries.

HEPATICA ACUTA (Pursh) Britton, Ann. N. Y. Acad. Sci. 6: 234.
1891.

A specimen collected near Wolf Creek bears one normal leaf and another with rounded lobes, exactly as in our second American species. Dr. Gattinger collected a similar plant on the Big Frog Mountain, in Polk County. Dr. Charles Mohr informs me that he finds such plants occasionally in the mountains of Alabama, and that they are referable to *H. acuta*. In East Tennessee the color of the sepals affords a good character, those of *H. acuta* being pale rose-purple or lavender, while in the other species they are always some shade of blue.

* 46: pl. 2069. 1819.

CARDAMINE PARVIFLORA L. Sp. Pl. Ed. 2, 914. 1763.

Common in dry upland woods about Knoxville, often appearing where the woods have been burnt over.

ITEA VIRGINICA L. Sp. Pl. 199. 1753.

Collected near Wolf Creek Station (no. 720), growing on a shaded ledge of sandstone along the French Broad River, an unusual habitat for this plant, which ordinarily makes its home in low swamps. The specimens were small, the largest not more than 1 m. high, but seemed otherwise typical.

AGRIMONIA MOLLIS BICKNELLII n. var.

Agrimonia mollis (Torr. & Gray) Britton var., Bicknell, Bull. Torr. Club, 23: 517. 1896.

Collected in the neighborhood of Wolf Creek, September 2d, (no. 691) where it grew in similar situations with the type, but was more common. Mr. Bicknell's excellent characterization leaves nothing to be added, and certainly indicates that this plant should have a varietal name. As Mr. Bicknell points out, the development of tubers is stronger than in *A. mollis*, and the tubers form on shorter roots. It is rather difficult to secure specimens of *A. mollis* that show completely the tuber development, but with var. *Bicknellii* a vigorous pull is enough to bring the plant up with a number of tubers attached. The two forms are much more obviously distinct in the living state than in herbaria. It does not seem that the existence of intergradations should be regarded as an obstacle to the publication of a variety, when the majority of the specimens are so well-marked.

GEUM FLAVUM (Porter) Bicknell, Bull. Torr. Club, 23: 523. 1897.

A few specimens with nearly mature fruit were found in deep rich mountain woods along Wolf Creek, August 23, 1897 (no. 686), growing with *Agrimonia hirsuta* (Muhl.) Bicknell. This easily recognizable and very distinct species is here reported for the first time from the Southern States.

STYLOSANTHES RIPARIA n. sp.

A perennial herb, with few or several (sometimes 8) stems from a deep, strong, woody root, which attains a maximum length of 3 dm.

Stems 1–3.5 (commonly 2–2.5) dm. long, decumbent, wide-spreading, much branched, slender, the somewhat elongated internodes with a usually well-defined line of rather tomentose pubescence decurrent from the base of the stipules; petioles very pubescent, only slightly exerted from the stipular sheath, the exerted portion about 1 mm. long; stipules large, the tube 3–5 mm. long, inflated, thin, membranous, brownish, appressed-pubescent, terminating in two subulate, aristate, more or less reflexed teeth about half as long; leaves spreading, pinnately trifoliolate, rhachis 1–2 mm. long, pubescent, petiolules very short; terminal leaflet (of leaves of main stem) 10–18 (commonly 12–15) mm. long, 4–8 mm. wide, broadly or narrowly elliptical, oblanceolate or even cuneate-obovate, usually rounded at apex (sometimes truncate or even slightly retuse), conspicuously subspinescently cuspidate, acutish at base, entire, thickish, dark green above, pale beneath, smooth and glabrous, with a very few short marginal hairs; midrib impressed above, prominent beneath, veins prominent on both surfaces but especially beneath, 10 or 12 in the larger leaflets, departing from the midrib at a very sharp angle, veinlets obscure; lateral leaflets somewhat smaller; inflorescence consisting of leafy bracted compound spikes, composed of 1-flowered bracted spikelets; spikes usually terminating the main stems and most of the branches, about 6 flowered, the two or three uppermost and one or two lowest flowers ordinarily abortive; lower primary bracts commonly unifoliolate, the teeth and leaflet sparsely ciliate with long rather weak setose red hairs, otherwise like the foliage leaves; upper primary bracts with gradually reduced and finally almost aborted leaflet. Secondary bract borne upon the short secondary axis,* which is adnate to the midnerve of the primary bract, 3–4 mm. long, entire, lance-subulate, usually broadest near middle and tapering thence to base and acutish apex, subhyaline, whitish, conspicuously ciliate; prophyllum borne on the tertiary axis,† closely approximate to the secondary bract and usually not obviously raised above it, about 3 mm. long, deeply cleft to or below the middle, two-nerved (the second nerve smaller and extending into the lobe), lobe as wide as blade but much shorter, both blade and lobe narrowly linear, rather obtuse or subacute, otherwise like the secondary bract; flower terminating the tertiary axis, short-pedicelled, very slightly raised above the prophyllum; calyx glabrous, conspicuously greenish-veined; tube slender, 3–4 (usually 4) mm. long; limb (from base to apex of lowest (longest) tooth) about 4 mm. long; lowest tooth ovate-oblong, acutish, 1.5 mm. wide, the other teeth shorter and narrower, more obtuse; corolla orange-yellow;

* The "Seitenaxe erster Ordnung" of Taubert.

† The "Seitenaxe zweiter Ordnung" of Taubert, who regards it as arising from the axil of the secondary bract.

vexillum nearly or quite 5 mm. long, 4.5–5 mm. wide ; wings nearly 3.5 mm. long, nearly 2 mm. wide, obovate, much narrowed towards base, tooth on vexillar side near base nearly 1 mm. long, oblong, very obtuse, straight ; keel about equalling the wings ; lower segment of loment very small, infertile ; upper segment 3–3.5 mm. long (excluding beak), nearly to quite 3 mm. wide, inequilaterally obovoid, somewhat compressed laterally, strongly gibbous on ventral face, curved toward base and apex on dorsal face, pubescent (rather sparsely when mature) with short curved white hairs, tricostate on both lateral faces (less often bicostate, or tricostate on one face and bicostate on the other), the cross-veins few, reticulated, all strong and dark-green ; beak .5–.7 mm. long, stout, strongly hooked (sometimes twice hooked in shepherd's crook fashion), almost central on the summit of the loment ; seeds not seen.

In groves of *Pinus rigida* Mill, on the banks of the French Broad River near Wolf Creek, growing in dry, sandy soil, accompanied by *Lechea racemulosa*, *Meibomia viridiflora*, etc.; collected by the writer in August, 1894, and again September 1, 1897 (no. 674).

Belongs to the section *Eustylosanthes* Vog., and is most nearly related to *S. biflora* (L.) B.S.P., from which it is readily distinguished, however, by its more slender, more decumbent culms, smaller leaves with shorter and comparatively broader leaflets, more conspicuously veined calyx with longer tube, vexillum almost always longer than broad (in *S. biflora* almost always broader than long), and longer, broader, obtuse and straight basal tooth to the keel petals. In *S. biflora* this tooth is about one-half as long, slender, acute or acutish and often somewhat uncinat. The best characters, however, are afforded by the prophyllum and the loment. In *S. biflora* some thirty specimens examined showed a prophyllum always perfectly entire, while in *S. riparia* the deep lobing of that organ is equally constant. In *S. biflora* the upper segment of the loment is as long as in *S. riparia*, but it is only about 2.5 mm. wide, and has an irregularly triangular outline in strong contrast to the semi-orbicular outline of the segment in *S. riparia*. Moreover, in *S. biflora* the segment is much more gibbous on the ventral face, but is straight on the dorsal face, thus throwing the beak quite to the dorsal edge of the summit. The beak is usually considerably shorter in *S. biflora* and less

strongly curved. The general aspect of *S. riparia* is much more suggestive of that of a *Trifolium* than in the case with *S. biflora*.

In the terminology of the above description I have followed that of Taubert's excellent Monographie der Gattung *Stylosanthes** and have adopted his ingenious view of the morphology of the rather complicated inflorescence. In his generic description (p. 4). Dr. Taubert distinguishes the lower primary bracts from foliage leaves by the absence of lateral leaflets, and notes no exception. In *S. riparia* the lowest bract, even when flower-bearing, is occasionally trifoliate. In one case I found only one of the lateral leaflets present.

ILEX BEADLEI W. W. Ashe; Coult. Bot. Gaz. 24: 377. 1897.

Collected in flower near Wolf Creek in May, 1893, and in fruit during the past season (633, 633½). Also on Chilhowee Mountain, Blount County, in June, 1893. Seems to be widely distributed and abundant at low elevations in the mountains of East Tennessee.

Mr. Ashe rightly segregates this plant from *I. monticola mollis* (A. Gray) Britton,† but does not point out the characters by which his species can readily be distinguished. *Ilex mollis* A. Gray‡ must be regarded as based upon the northern plant, although Gray confused with it the southern species. *Ilex Beadlei*, however, does not apparently extend into the region covered by Gray's Manual. Hence we must regard as the type of *I. mollis* the plant of the Pennsylvania mountains, which, so far as herbarium specimens show, is a mere pubescent variety of *I. monticola* A. Gray. This, too, may range southward along the higher mountains with the smooth form of *I. monticola*, but is not to be mistaken for *I. Beadlei*. The latter species, as I know it, is found only on the lower hills or down near the river-banks, always in rather dry soil,

* Verhand. Bot. Ver. Prov. Brandenb. 23: 1-34. 1891.—*S. hamata* (L.) Taubert is here cited (p. 23) as occurring in Tennessee (no. 609 of A. H. Curtiss' distribution). As it did not seem likely that this almost strictly tropical plant should be found so far north and nowhere in the intervening region, I made inquiry of Dr. Robinson, who informs me that two species of *Stylosanthes* collected by Curtiss are deposited in the Gray Herbarium, one (no. 609) being typical *S. biflora* from Tennessee, while the other (no. 609*) is *S. hamata* from Umbrella Key, South Florida.

† Mem. Torr. Club, 5: 217. 1894.

‡ Man. Ed. 5, 306. 1867.

often growing with *Castanea pumila* Mill. It is distinguished from any form of *I. monticola* by its smaller size (usually about 2 m. high); and smaller leaves which are proportionately broader, shorter, and more abruptly pointed, thicker, firmer in texture, almost tomentose beneath, and of a characteristic light, almost yellow-green color. *I. monticola*, as it occurs in East Tennessee, prefers a rich, comparatively moist soil in deep, shady ravines at higher elevations (1000–2000 m.), where it usually grows as a small tree with slender trunk some 5–7 m. high, and thin, long-pointed leaves of a fine, deep green. It is often accompanied by such plants as *Viburnum alnifolium*, *Cornus alternifolia*, etc. The pubescence on the under surface of the leaf in all specimens of *I. monticola mollis* that I have seen is never so dense as is constantly the case in *I. Beadlei*.

EUONYMUS AMERICANUS L. Sp. Pl. 197. 1753.

Specimens collected along the French Broad, near Wolf Creek (no. 636) have broadly ovate leaves not exceeding 3.5 cm. in length, and mostly about 2 cm. wide. The plants were erect and some 12–15 dm. high, however, and none of the leaves were at all obovate.

VIOLA EMARGINATA (Nutt.) Le Conte, Ann. Lyc. N. Y. 2: 142. 1825.

Specimens of an extreme form of this species, with deeply cut leaves, were obtained near Wolf Creek. I am not aware that this violet has been heretofore reported as belonging to the Southern Flora.

RHODODENDRON MAXIMUM L. Sp. Pl. 392. 1753.

Growing among rocks at the summit of Bluff mountain is a peculiar form, only some 1.5 mm. high, with small leaves about 1 dm. long and 2 cm. wide, the margins inclined to be involute (in the living plant) and the under surface pale brown.

LEUCOTHÖE RACEMOSA (L.) A. Gray Man. Ed. 2, 252. 1856.

As far as I know this shrub of the low country swamps has not been reported from the mountain region of the Southern States. I found it last season on the sandy banks of the French Broad River near Wolf Creek (no. 814) and have also collected it along the Emory in Roane County. *L. recurva* (Buckley) A. Gray is

likewise frequent about Wolf Creek, but is confined to rather dry hillside woods.

VACCINIUM MELANOCARPUM C. Mohr, n. sp.

Vaccinium stamineum melanocarpum C. Mohr, Bull. Torr. Club, 42: 25. 1897.

At the summit of Bluff Mountain on the Tennessee-North Carolina line just south of the French Broad River, I collected during the past season (no. 811) specimens of a *Vaccinium* in young fruit, which Dr. Mohr identifies as his *V. melanocarpum*. The Tennessee plant differs from typical Alabama specimens, however, in its shorter, less pointed and thicker leaves with more prominent and strongly reticulated veins, and in its larger bracts. It is a shrub some 4 dm. high, with gnarled, ascending branches, and grows on the open summit of the mountain, accompanied by such plants as *Prunus Pennsylvanica* and *Sambucus pubens*. So different is its aspect from that of *V. stamineum* that it did not occur to me at first that it was related to that species.

VACCINIUM HIRSUTUM Buckley, Am. Journ. Sci. 45: 175. 1843.

Dr. Small, in a recent number of the BULLETIN,* reported his find of this little-known species at Tallulah Falls, Georgia, as "the first collection since the original discovery by Buckley." But flowering specimens were secured in June, 1891, in the Cade's Cove Mountains of Blount County, Tennessee, by Prof. A. Ruth and the writer. There it grew in some quantity on the dry south slope of the ridge, along with *Baptisia tinctoria*, *Sericocarpus solidagineus*, etc. Dr. Gattinger, in his catalogue,† reports this plant as occurring in the "High Mountains of East Tennessee."

LYSIMACHIA FRASERI Duby; DC. Prodr. 8: 65. 1844.

Found at two or three points along the French Broad River near Wolf Creek (no. 829). About one mile above Wolf Creek quite a number of plants were discovered, growing in a tangled undergrowth of *Rubus villosus* Ait., and *Vitis rotundifolia* Michx., on the river-bank. Many of the plants measured 1.5 dm. in height.

* Bull. Torr. Club, 24: 64. 1897.

† Tennessee Flora 61. 1887.

STEIRONEMA TONSUM (Wood) Bicknell; Britton & Brown, Ill. Fl. N. U. S. 2: 590. 1897.

S. intermedium Kearney, Bull. Torr. Club, 21: 263. 1894.

Specimens collected on the banks of the French Broad River near Wolf Creek, Sept. 1 (no. 830), growing in shaded sandy soil, depart from the type of *S. intermedium* not only in habitat but in having the petioles sparsely ciliate their entire length with short lax hairs. Nevertheless they are unmistakably *S. tonsum*, having the slender habit, smaller leaves with less conspicuous veins, much reduced upper leaves which give the inflorescence the aspect of a bracted panicle, comparatively longer peduncles, and calyx-lobes nearly twice as long as the capsule.

STEIRONEMA TONSUM SIMPLEX n. var.

Stems simple, 2-3 dm. high, slender; petioles short, not more than 15 mm. in length, slender, naked except at the base where a few ciliae occur; leaf-blades 1-4 cm. long, 1.5-2.5 cm. wide, broad ovate, the lowest very small and orbicular, subcordate at base, rather abruptly pointed at apex, thin and bright green; inflorescence a four or five-flowered leafy terminal panicle, occasionally with scattered peduncles from the axils of the upper foliage leaves; calyx-lobes only slightly exceeding the mature capsule (in one case merely equalling it).

A few plants collected on the shaded margin of a mountain-brook near Wolf Creek (no. 831), growing in rather moist, sandy soil, accompanied by *Habenaria clavellata* (Michx.) Spreng.

PERILLA FRUTESCENS (L.) Britton, Mem. Torr. Club, 5: 277. 1894.

Abundant about dwellings at Wolf Creek (no. 874). It was formerly cultivated as a foliage plant, but is now thoroughly naturalized and is spreading rapidly. In this form the leaves are always purple underneath, but it does not agree with Bentham's characterization of *P. ocimoides crispa** (*P. frutescens Nankinensis* (Lour.) Britton), in that the leaf margins are neither crisped nor fimbriate-lacerate.

SCUTELLARIA VENOSA n. sp.

Scutellaria saxatilis pilosior Benth.; DC. Prodr. 12: 424. 1848?

*DC. Prodr. 12: 164. 1848.

Scutellaria versicolor minor A. Gray, Syn. Fl. N. Am. 2: Pt. 1, 378. 1878.* In part, not of Chapm.† nor *S. minor* L.

A small plant with usually solitary stems from a slender creeping rootstock. Stems 5–12 cm. long, erect or ascending, rather acutely 4-angled, pubescent with short, mostly retrorse or recurved white hairs, the pubescence towards the summit glandular, denser and more spreading; petioles slender, pubescent with retrorse appressed hairs, those of lowest leaves 1.5–3 cm. long, spreading or recurved, those of uppermost foliage leaves 1 cm. long or less, ascending; largest (often the uppermost) leaf-blades 3–6 (usually 5) cm. long, 2–3 cm. wide; smallest (usually the lowest) considerably reduced; all broadly ovate, obtuse, cordate with a rather open sinus, coarsely crenate, rather sparsely ciliate with short spreading hairs, pubescent with short appressed hairs on both surfaces, but especially along the veins beneath, thin, bright green above, paler beneath, conspicuously veiny, the veins prominently reticulated and almost rugose beneath; inflorescence a simple solitary terminal raceme (less often a much-reduced, simple panicle) 2–4 cm. long, mostly 10–20-flowered; pedicels 2–3 mm. long, rather stout, glandular-pilose, ascending; bracts barely equalling the pedicels, ovate, obtusish, glandular-pubescent; calyx (in flower) about 3 mm. long, rather densely pubescent; (in fruit) about 5 mm. long, sparingly pubescent, light green; corolla about 15 mm. long, pale blue and white, puberulent; anthers minutely ciliate; nutlets 1 mm. in greatest diameter, globose, strongly depressed.

Growing with *Circaea alpina* L. just below the summit of Bluff Mountain, where it was collected August 28 (no. 873). *S. venosa* is closely related to *S. cordifolia* Muhl. (*S. versicolor* Nutt.) from which it differs in its smaller size, much shorter pubescence of leaves and inflorescence, much reduced bracts and considerably smaller calyx and corolla. *S. cordifolia* is mainly a campestrian species preferring much lower elevations, and is not known to occur anywhere in the region where *S. venosa* was collected. *S. saxatilis pilosior* Benth. may be the same plant, but is not identifiable with any certainty from Bentham's meagre description. It may very well be only a form of *S. saxatilis*.

MELAMPYRUM LATIFOLIUM Muhl. Cat. 57. 1813.

Both this species and *M. lineare* Lam. occur near Wolf Creek,

**S. rugosa* Wood Class Book, Ed. 2, cited here by Gray as a synonym of *S. versicolor minor*, is unquestionably a form of *S. saxatilis* Riddell, to which Wood himself referred it in subsequent editions of the Class Book.

Fl. S. U. S. 323. 1860.

Cocke County, and there exhibit a wide difference in habitat and period of flowering. *M. latifolium* was collected in May, 1893, growing in deep, rich, moist woods along a mountain brook, and was then in full flower. In September, 1897, I sought for it in the same place, but not a vestige was to be found. At that time, however, *M. lineare* was in full flower, growing on dry soil on the top of Brushy Mountain.

VIBURNUM CASSINOIDES L. Sp. Pl. Ed. 2, 384. 1763.

Along a brooklet near the summit of Max Patch Mountain, (no. 730). The specimens are hardly typical, but differ from *V. nudum* L. in their distinctly crenulate dentate leaves with dull upper surface and peduncles distinctly shorter than the cyme. The same form grows on the summit of Thunderhead, Blount County (alt. about 2000 m.), where it was collected by the writer in June, 1891.

SYMPHORICARPOS RACEMOSUS Michx. Fl. Bor. Am. 1: 107. 1803.

In waste-ground near a house at Lemon's Gap, Cocke County, where a large patch of it is well established and was loaded with its white fruit on Sept. 8 (no. 733).

SOLIDAGO ARGUTA CAROLINIANA A. Gray. Syn. Fl. N. Am. 1: Part 2, 155. 1884.

Numerous specimens of a form of *S. arguta*, probably referable to this variety, collected near Wolf Creek in August (nos. 759, 760) are entirely destitute of rays.

ASTER CURTISH Torr. & Gray, Fl. N. Am. 2: 110. 1841-43.

This beautiful plant is the most common *Aster* near Lemon's Gap, at an elevation of about 1000 m., beginning to flower about the last week in August. It varies from about 5 dm. high, with slender, unbranched stems bearing two or three heads, to a tall, stout, much-branched plant 15 dm. high, bearing as many as 150 heads.

GNAPHALIUM HELLERI Britton, Bull. Torr. Club, 20: 280. 1893.

On very dry hillsides, with *Gyrostachys simplex*, *Buchnera Americana*, *Silphium compositum*, etc., near Wolf Creek, collected Sep-

tember 6 (no. 781). This is a well-marked species when growing, although somewhat difficult to characterize. It is a much lower and more slender plant than *G. obtusifolium* L., of greener aspect, with looser inflorescence and fewer heads. In habitat it is strikingly different from *G. obtusifolium*, which, in East Tennessee and in the mountains of Kentucky, confines itself to low fields and fallow ground, where introduced weeds are most frequent, while *G. Helleri* is found upon the dry ridges, sometimes even on arid sandstone outcrops, amid a purely indigenous vegetation.

XANTHIUM SPECIOSUM n. sp.

A stout much-branched leafy annual herb, about 1.5 m. high. Stem about 2.5 cm. in diameter just above the tumid base, erect, straight below, zigzag above, four-angled, obtusely below, rather acutely above, striate above between the prominent angles, hard and almost ligneous in texture, with greenish cortex, sparsely papillose below with white, rather conspicuous papillae that are often extended into short stout appressed antrorse prickle-like trichomes, strongly hispidulous above with similar trichomes, interspersed with minute ones; petioles rather slender, striate, deeply grooved on upper face, especially towards the enlarged base, strongly hispidulous, minutely pubescent along the groove, the lower ones 10–15 cm. long; leaf-blades (the larger ones 17–20 cm. long, 19–22 cm. wide) very broadly triangular-ovate, rather deeply cordate with a wide rounded sinus which is interrupted by a small triangular portion of the blade included between the two primary side-veins, rather acute at apex, obtusely and not deeply 3–5-lobed, with the primary lobes themselves slightly lobed, obtusely and not conspicuously dentate, rather thick, dull green, paler beneath, strongly papillose, scabrous on both surfaces, hispidulous along the veins and margins, especially beneath, with appressed antrorse prickle-like trichomes, rather thickly besprinkled on both surfaces with minute shining resinous granules, veins and larger veinlets prominent, especially beneath, divergent at a wide angle, the mid-nerve and the almost equally strong primary side-veins broad, somewhat flattened, strongly striate; flowers not seen; fruiting involucre 2.5–4 cm. long, 2.5–3 cm. wide (including prickles), ovoid, light brown in color, sparsely besprinkled with shining resinous granules, rostrate at apex with two or three very stout, more or less incurved, uncinatate or biuncinatate beaks 10–12 mm. long, densely aculeate with long stout strongly uncinatate prickles (the hook nearly horizontal to very strongly incurved), 8–9 mm. long, the lower retrorse, the middle horizontal, the upper antrorse; both beaks and prickles densely hispid (the former to near the apex,

the latter for $\frac{1}{2}$ – $\frac{2}{3}$ of their length from the base), with broad, flat, sharp-pointed, rather lax, spreading or slightly retrorse hairs, which are elongated-triangular in outline, and gradually diminish in size upward.

Collected by the writer September 16, near Wolf Creek Station (no. 785) where it grows on the sandy bottom-lands near the French Broad River and is almost certainly indigenous.

X. speciosum finds its nearest relative in *X. Canadense* Mill., from which it is distinguished by its great size, larger and proportionately broader fruiting involucre, longer stouter and more closely set prickles, longer and stouter beaks, which are more nearly erect and more strongly incurved towards apex, and longer and larger trichomes on the beaks and prickles. *X. macrocarpum* DC.,* a species not certainly known to occur in the United States, is described by the author as having an oval-oblong fruiting involucre twice longer than broad, which would certainly not apply to *X. speciosum*. Moreover, all probably authentic specimens of *X. macrocarpum* examined showed a strong glandular puberulence upon the involucre. None of the species described by Wallroth and others from North America can be identified with the Tennessee plant.

The whole genus is in need of thorough revision, and nowhere more so than in the United States. The most cursory glance at the material in our larger herbaria is enough to show that *X. Canadense*, *X. strumarium* and *X. spinosum* are by no means the only species in this country. But until the Old World species are better understood, a satisfactory treatment of the genus here is impossible.

SENECIO SMALLII Britton, Mem. Torr. Club, 4: 132. 1894.

Rather abundant on dry banks near Wolf Creek Station, Cocke County, Tennessee, where it was collected by the writer in May, 1893. Here reported for the first time as occurring in Tennessee.

HIERACIUM PANICULATUM L. Sp. Pl. 802. 1753.

The maximum height of this species as given by Gray in the Synoptical Flora is three feet. A plant collected at Lemon's Gap, where it grew in dry upland woods, has a stem-length of 17 dm.

* Prodr. 5: 523. 1836.